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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,721	03/18/2004	C. Edward Baxter JR.	506431-0035	6994

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EXAMINER

TESKIN, FRED M

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/803,721

Applicant(s)

BAXTER, C. EDWARD

Examiner

Fred M Teskin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 931804
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

Claims 1-29 are currently pending and under examination herein.

Applicant is advised that should claim 1 ultimately be found allowable, claim 16 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Instantly, claims 1 and 16 are both drawn to a liquid phase polymerization process for preparing a mid-range PIB polymer composition. The two claims set forth identical manipulative steps although claim 1 includes a preambular recitation as to percentage of PIB "first portion" molecules not mentioned in claim 16. Nevertheless, given the identity of procedural steps, it is not seen how the product prepared by the process of claim 16 cannot be the same composition as that recited in claim 1. Thus the two claims are deemed so close in content as to cover the same thing.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 29 is internally inconsistent as to product identification: a "PIB maleic anhydride adduct" is recited in the preamble but no source of maleic anhydride is recited in the body of the claim; rather, reacting "with a phenolic compound" is called for per the second step of the claimed process. Thus there is uncertainty as to the nature of the product intended to be prepared.

The following nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-22 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-40, 42-44, 46-50, 52-54, 56-60, 62-68, 70-72 and 74-76 of U.S. Patent No. 6,683,138.

Although the conflicting claims are not identical, they are not patentably distinct from each other because they differ merely in matters of scope and/or semantics. In

particular, both groups of claims are drawn to the same basic process (liquid phase polymerization of isobutylene-containing feedstock) and both recite essentially the same manipulative steps. Thus the instantly claimed process is comprised of seven procedural steps as set forth in, e.g., claims 1, 14 and 16, which steps are seen to correspond respectively to the multiple steps of the patented process as set forth in patent claim 1. Further, the proportion of complexing agent to BF_3 called for in the second step of the instant process (no more than about 1.3:1) fully embraces the molar ratio ranges specified in patent claims 21 and 22 and substantially overlaps those specified in claims 19 and 20, for the corresponding catalyst components.

Moreover, while the '138 patent claims call for preparing "highly reactive polyisobutylene" and the instant claims are to preparing a "mid-range vinylidene content PIB polymer composition," the two expressions are inclusive of the same polymer products; that is, "highly reactive" is defined in the '138 patent to mean a vinylidene content of "at least about 70 %" (see, e.g., claim 12 thereof), which encompasses values slightly below precisely 70 % (e.g., 69 %) and fully within the "less than 70 %" vinylidene content range of the composition produced by the herein claimed process.

In regard to the other product/composition limitations, it is noted that applicant has acknowledged that the highly reactive polyisobutylene made per the teachings of the application that resulted in the '138 patent contains almost no tetra-substituted isomers, so that the total of alpha- (vinylidene) and beta-isomers of essentially 100 %. (Specification, page 10, lines 3-5.)

Thus, the '138 patent claims and the present application claims are deemed to cover processes of preparing the same species of polyisobutylene polymers by essentially the same manipulative steps.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-22 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. 6,683,138 to Baxter, et al.

Baxter et al is applied in essentially the same manner as in the preceding rejection. That is, based on the identity of feedstock, catalyst composition and polymerization conditions, Baxter et al is seen to disclose the manipulative steps of the herein claimed process in the context of preparing a PIB having a vinylidene content as low as "about 70 %," and as to which product applicant has acknowledged the virtual

absence of tetra-substituted isomers, so that the total of alpha- (vinylidene) and beta-isomers therein is essentially 100 %.

Where, as here, the only difference between the process claimed and the prior art is in the recital of product produced, a rejection over the prior art is proper, *In re Sussmann*, 60 USPQ 538, 540 (CCPA 1944).

Alternatively, to the extent Baxter et al prefer a higher vinylidene content than is permitted by the rejected claims, it is contended that the patentees' teaching of a terminal (vinylidene) unsaturation content of "at least about 70 %" (col. 11, ll. 32-34) would have suggested to one of ordinary skill the utility of the disclosed process in preparing PIB having a lower vinylidene content, e.g., 69 %. Moreover, Baxter et al identify conversion rate as inversely related to vinylidene content - i.e., the higher the conversion rate, the lower the vinylidene content (see col. 11, lines 35-45 of the reference); this would have indicated to one so skilled which process parameter is result-effective in terms of regulating vinylidene content.

Accordingly, at the time of applicants' invention, it would have been obvious to one of ordinary skill in the art to modify the process of Baxter et al such that the resultant product comprises a PIB composition within the scope of the rejected claims.

Claims 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 5945575 to Sigwart et al, alone or in view of U.S. 5733993 to Yu et al..

Sigwart et al disclose polyisobutenes that meet the limitations of independent claims 23, 28 and 29 as to percentage of alpha position double bonds and percentage

of first and second portions of PIB molecules having alpha and beta position double bonds. See Example Nos. 3, 5 and 10 in Table 1 (cols. 13-14) and Example Nos. 18-21 in Table 3 (col. 15). In each of these examples, polyisobutene is characterized by a content of terminal double bonds (designated S(I)) and a content of terminal double bonds plus beta-olefinic double bonds (designated S(II)) that respectively fall below the maximum percentages of "first portion" and "first and second portions" of PIB molecules permitted in the PIB composition used in the claimed process.

Because the combined alpha plus beta olefin content in the cited examples of Sigwart et al exceeds 90 mol %, the percentage of tetra-substituted internal double bonds in these products is reasonably presumed to be no more than about 10 %, per claims 23, 28 and 29.

Thus, Sigwart et al differ from claims 23-29 only in that the polyisobutene of the cited examples is not used therein as a starting material in a process for producing a PIB amine compound or a PIB maleic anhydride adduct as per the claimed process.

Nevertheless, Sigwart et al explicitly recognize the utility of reactive polyisobutene, having a molecular weight ranging from 500 to 5000 and a high content of terminal vinylidene groups, preferably more than 50 mol %, as an intermediate in the preparation of lubricant and fuel additives. See column 1, lines 54+ where the preparation of a polyisobutene/maleic anhydride adduct intermediate and its conversion to the corresponding additive by reaction with specific amines is discussed. Maleic anhydride is a species of "reactive site" compound within claims 23 and 25, and the

reactant specified in claims 28 (final line) and 29 (first line); and an "amine" is the final reactant specified in claim 28.

Thus, Sigwart et al would have taught those of ordinary skill how to prepare a PIB maleic anhydride adduct and a PIB amine compound using the reactants claimed. Further, since the polyisobutenes of the aforementioned examples possess a molecular weight and terminal vinylidene content within the scope of the reactive polyisobutene discussed in Sigwart et al, one would have reasonably expected them to perform equivalently as reactants in preparing the same intermediate and corresponding additive.

Accordingly, at the time of applicants' invention, it would have been obvious to one having ordinary skill in the art to select the polyisobutene of any of Examples 3, 5, 10 and 18-21 of Sigwart et al as starting material in an otherwise conventional process for preparing a PIB maleic anhydride adduct or PIB amine compound, as claimed.

As to claims 24, 26 and 27, Yu et al teaches the utility of unsaturated acidic compounds, including species of the claimed reactants, in a reaction with polybutenes having a number average molecular weight from about 800 to 5000 and containing at least 50 mol % terminal vinylidene radicals and a diene reactant to form a terpolymer useful as an intermediate for lubricant oil and fuel additives. See column 3, lines 3-8, 40-45 and lines 55+ and column 5, lines 10-15, where halogenated compounds and carbonyl-containing compounds are mentioned as suitable acidic acid compounds; and column 4, lines 15-17, where reaction of the intermediate with a polyamine to form polysuccinimide is proposed.

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Since Yu et al teaches a polybutene having a molecular weight and terminal vinylidene content commensurate with the corresponding parameters of the polyisobutene of Sigwart et al, one would have been reasonably expected the latter to be utile as a reactant in preparing a lube oil additive as per Yu et al. Further, the commonly disclosed utilities (lube oil and fuel additives) would have indicated the suitability of the polyisobutene of Sigwart et al in the process of Yu et al.

Accordingly, at the time of applicants' invention, it would have been obvious to one having ordinary skill in the art to subject the polyisobutene of any of Examples 3, 5, 10 and 18-21 of Sigwart et al to reaction with a compound within claims 24, 26 and 27 as taught by Yu et al, motivated by a reasonable expectation of obtaining an intermediate suitable for producing a lube oil or fuel additive via subsequent amination.

No claims are allowed.


Any inquiry concerning this should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



FRED TESKIN
PRIMARY EXAMINER
1/7/13

FMTeskin/06-04-04